

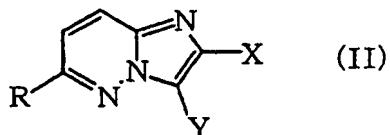
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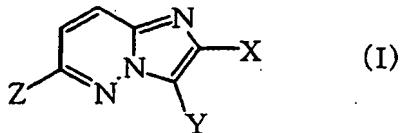
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CLAIMS

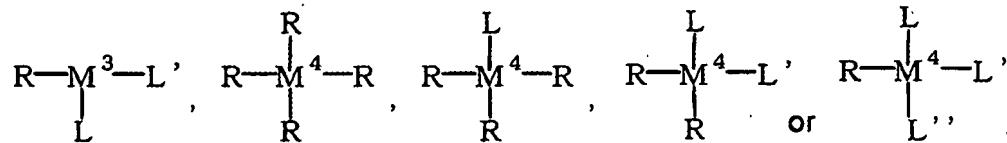
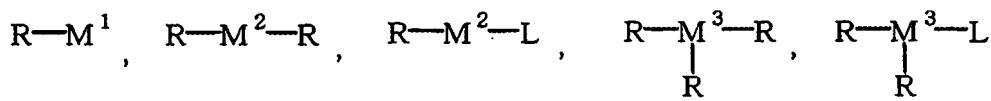
1. A process for producing a compound represented by the formula (II):



wherein X represents a halogen atom or an optionally halogenated lower alkyl group, Y represents a hydrogen atom or  $\text{SO}_2\text{N}=\text{CH}-\text{NR}^1\text{R}^2$  (wherein  $\text{R}^1$  and  $\text{R}^2$  represent each a lower alkyl group, or  $\text{R}^1$  and  $\text{R}^2$  may be combined together with the adjacent nitrogen atom to form a heterocyclic ring), and R represents a lower alkyl group, lower cycloalkyl group which may be substituted with lower alkyl, lower alkenyl group or lower alkynyl group, which comprises reacting an imidazo[1,2-b]pyridazine compound represented by the formula (I):



wherein X and Y are as defined above, and Z represents a halogen atom or  $\text{OSO}_2\text{R}^3$  (wherein  $\text{R}^3$  represents an optionally fluorinated lower alkyl group or phenyl group which may be substituted with lower alkyl), with one or more compounds selected from the organometallic compounds represented by the formula:



wherein R is as defined above, and M<sup>1</sup> represents an univalent metal, M<sup>2</sup> represents a divalent metal, M<sup>3</sup> represents a trivalent metal and M<sup>4</sup> represents a tetravalent metal, and L, L' and L" are the same or different and represent an anion, under the presence of a transition metal catalyst.

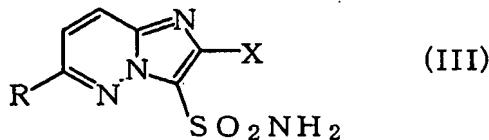
2. The process according to claim 1, wherein the metal of the transition metal catalyst is palladium, nickel or iron.
3. The process according to claim 1, wherein the metal of the transition metal catalyst is nickel.
4. The process according to claim 1, wherein the metal of the organometallic compound is magnesium or zinc.
5. The process according to claim 1, wherein R is a lower alkyl group or lower cycloalkyl group which may be substituted with lower alkyl.
6. The process according to claim 1, wherein X and Z are each a chlorine atom.
7. The process according to claim 1, wherein Y is a hydrogen atom and R is a lower alkyl group.
8. The process according to claim 3, wherein the metal of

the organometallic compound is magnesium or zinc.

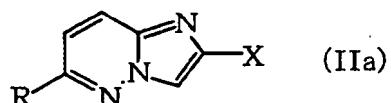
9. The process according to claim 8, wherein the organometallic compound is a lower alkylmagnesium halide or a lower alkylzinc halide.

5 10. The process according to claim 9, wherein the organometallic compound is a propylmagnesium halide or propylzinc halide and the nickel catalyst is [1,3-bis(diphenylphosphino)propane]nickel(II) dichloride or bis(triphenylphosphine)nickel(II) dichloride.

10 11. A process for producing a sulfonamide compound represented by the formula (III):

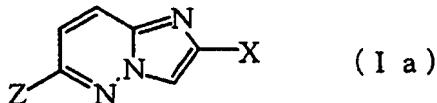


wherein X represents a halogen atom or an optionally halogenated lower alkyl group and R represents a lower alkyl group, lower cycloalkyl group which may be substituted with lower alkyl, lower alkenyl group or lower alkynyl group, which comprises sulfonating with chlorosulfonic acid a compound represented by the formula (IIa):

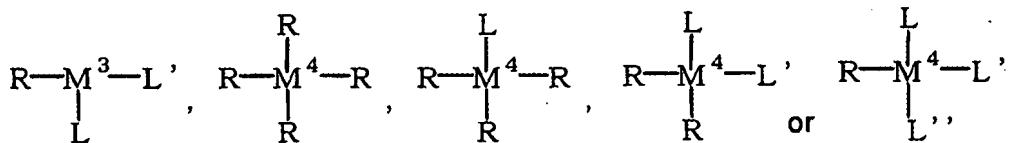
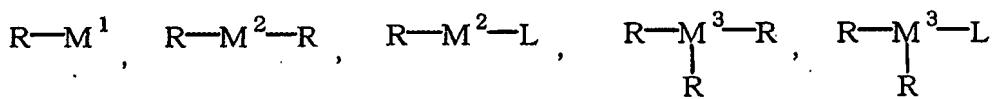


20 where X and R are as defined above, which is obtained by reacting an imidazo[1,2-b]pyridazine compound represented

by the formula (Ia):

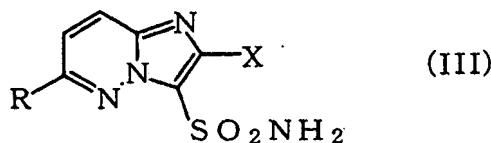


wherein X is as defined above, and Z represents a halogen atom or  $\text{OSO}_2\text{R}^3$  (wherein  $\text{R}^3$  represents an optionally fluorinated lower alkyl group or phenyl group which may be substituted with lower alkyl), with one or more compounds selected from the organometallic compounds represented by the formula:

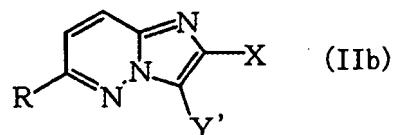


wherein R is as defined above, and  $\text{M}^1$  represents a univalent metal,  $\text{M}^2$  represents a divalent metal,  $\text{M}^3$  represents a trivalent metal and  $\text{M}^4$  represents a tetravalent metal, and L, L' and L" are the same or different and represent an anion, under the presence of a transition metal catalyst, followed by converting to a sulfonyl chloride with phosphorus oxychloride, then reacting with ammonia.

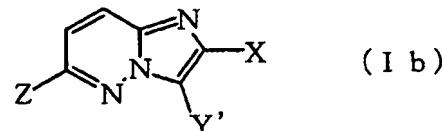
12. A process for producing a sulfonamide compound represented by the formula (III):



wherein X represents a halogen atom or an optionally halogenated lower alkyl group and R represents a lower alkyl group, lower cycloalkyl group which may be substituted with lower alkyl, lower alkenyl group or lower alkynyl group, which comprises hydrolyzing under the presence of acid or alkali a compound represented by the formula (IIb):

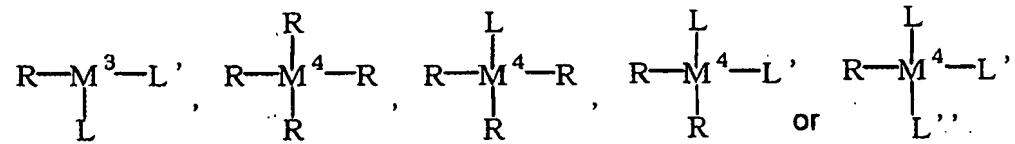
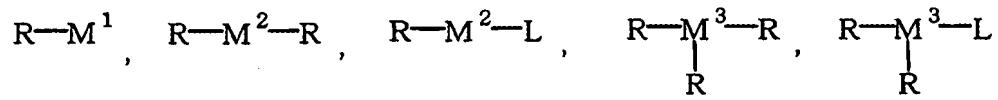


wherein X and R are as defined above and Y' represents  $\text{SO}_2\text{N}=\text{CH}-\text{NR}^1\text{R}^2$  (wherein  $\text{R}^1$  and  $\text{R}^2$  represent each) <sup>a</sup> lower alkyl group, or  $\text{R}^1$  and  $\text{R}^2$  may be combined together with the adjacent nitrogen atom to form a heterocyclic ring), which is obtained by reacting an imidazo[1,2-b]pyridazine compound represented by the formula (Ib):



wherein X and Y' are as defined above, and Z represents a halogen atom or  $\text{OSO}_2\text{R}^3$  (wherein  $\text{R}^3$  represents an optionally fluorinated lower alkyl group or phenyl group which may be substituted with lower alkyl), with one or more compounds

selected from the organometallic compounds represented by the formula:



wherein R is as defined above, and  $M^1$  represents an univalent metal,  $M^2$  represents a divalent metal,  $M^3$  represents a trivalent metal and  $M^4$  represents a tetravalent metal, and L, L' and L" are the same or different and represent an anion, under the presence of transition metal catalyst.